



BOROUGH OF PRESTON.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH

TO THE

URBAN AND PORT SANITARY AUTHORITIES,

FOR THE

Year ending December 31st, 1901.

H. O. PILKINGTON,

MEDICAL OFFICER OF HEALTH,

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Report of the Medical Officer of Health.

TO THE CHAIRMAN AND MEMBERS OF THE HEALTH COMMITTEE.

Gentlemen,

In submitting my Annual Report for the past year—the first of the present Century—it is pleasing to be able to commence with the statement that in many respects the Vital Statistics are of a favourable and satisfactory nature.

The general Death Rate—19·56 per thousand—shews a marked reduction upon that for the preceding year, and with two exceptions, those for the years 1896 and 1898, is indeed the lowest for any period concerning which reliable records are available. The improvement is in a great measure due to the comparatively short period during which the Diarrhœal epidemic continued, to the reduced mortality from all the various forms of Zymotic disease, with the exception of Scarlet Fever, and to the lowered rate of mortality from the various diseases which are usually classed together as belonging to the Respiratory group.

And although this improvement is well marked, it must be remembered that it would have been still further increased, had the population been continued on its former basis, and not—as was the case—so greatly reduced by the Census taken in the early part of the year. The previous enumeration in 1891 showed a population of 107,864, and this had been increased by the Registrar-General from year to year, until at the close of the decade the figures stood at 120,196.

The rate of increase was based upon the assumption that the population had extended at the same rate as in the previous decade, and it was therefore a disappointment to find that the Census gave a return not exceeding 112,954.

And this is the more surprising when it is considered that the natural increase—the excess of Births over Deaths—amounted during the intercensal period to 11,525, so that in spite of the recent introduction of fresh industries in the neighbourhood of the River and the

Dock, the emigration of persons to other Towns must have greatly exceeded the amount of immigration.

With the beginning of the year an important alteration took place with regard to the division of the Town into Wards; the number, formerly six, having been doubled, so that in the various Tables and Plans for the present Report, I deal with twelve distinct localities. In some respects it is an advantage that the Town should thus be parcelled out into smaller areas, but on the other hand it prevents a continuance of the comparison which, as regards the Ward statistics, could otherwise have been made with those of former years. Nor has the alteration been so made that any two of the modern Wards represent one of the older ones, as in that case the comparison could still have been continued, but fresh boundaries have been formed, so that now there are twelve Wards differing considerably in area, and with populations varying from 14,592 to 7,262.

Further allusion will be made to the differences in the rate of mortality, and presumably therefore in the amount of sickness which has occurred even in Wards directly adjoining each other, but which present essential differences as regards the class of houses, the air space around each dwelling, and the general education of the householders.

Again I am able to report an absolute immunity throughout the year from Small Pox. Towards February this disease, after a lengthy absence from the country, again made its appearance in Glasgow, and with the beginning of Spring had established itself in London. In spite of prompt and well advised sanitary measures, the disease rapidly spread; at first in the Metropolis and the immediate neighbourhood, but soon afterwards in other towns. Throughout the year a total of 359 deaths occurred from Small Pox in England and Wales, and 192 of these were registered during the last quarter in London and West Ham.

Unfortunately with the present Vaccination laws there is in every locality an increasing number of the population, who, unprotected by vaccination, are not only themselves especially susceptible to infection, but from their unprotected condition offer as it were an invitation to the disease, and so form a source of danger to the more prudent members of the community. Improved sanitation has no doubt done much to reduce the spread of Small Pox, but it cannot take the place of vaccination and re-vaccination, which not only confer a comparative immunity from attack, but also so greatly lower the mortality amongst those affected. The movement at present made by certain Health Authorities to obtain the repeal of Clause 2 of the Vaccination Act is worthy of the attention and support of all those having control of Sanitary matters.

NOTE.—*Since writing the above, a case of Small Pox has, in March last, been introduced into the Town, but the infection has so far been confined to the patient—a child—who was at once removed to the Holme Slack Hospital.*

From Typhoid Fever the death rate was below the average, 24 fatal cases having been recorded, as against 44 in the previous year, and an average of 34 in each of the six preceding years. Trinity Ward showed the greatest number of deaths from this cause—7—whilst in Avenham, Ashton, Ribbleton, and Fishwick Wards no fatal case of the disease was recorded. Most of the deaths were those of young adults, and whilst cases of the disease occurred throughout the year, it was as usual in the months of Autumn that it was especially prevalent.

Scarlet Fever was present in the Town throughout the whole of the year, the seeds of infection being a legacy from the previous twelve months, during which time the disease was prevalent. Throughout nearly the whole of its course the type of disease was fortunately a mild one, and the 86 deaths directly ascribed to this cause only represented a case mortality of 4·93 per cent.

Still, as I have often pointed out, the effects of an attack of Scarlet Fever do not always end with the patients apparent recovery, since it is a disease especially liable to leave behind certain after effects, not unfrequently resulting in a permanent damage to the patient's constitution.

It is on this account that a slight, but neglected, attack of Scarlet Fever may in the end prove more harmful than one which from its very severity induces greater care, and parents would do well to recognize the fact that in its mildest form it is a serious illness and one which demands the greatest care and attention from those responsible for the patients guidance and control.

Notices were again issued to the various Schools asking that all children, who might be in contact with the infection, should for a time be excluded from attendance; and several of the Schools were closed about a week before the commencement of the Christmas Holidays. Later on I considered it advisable to extend the duration of the holidays for an additional fortnight, since, if even no other good resulted, increased time was thus afforded for the thorough disinfection and cleansing of the school premises.

More than half of the total 86 deaths occurred in children between the ages of 1 and 5 years, 23 in those between 5 and 10 years, 5 in young adults, and 3 in infants under the age of 12 months.

There is no doubt that in many instances the infection was spread by slight unrecognized cases where no medical assistance was called in, or by the neglect of isolation for a sufficiently long time in certain other cases during the tedious period of convalescence.

As is universally admitted, it is a very difficult matter to secure anything like efficient isolation in an ordinary cottage house, especially if the family be a large one ; but in order that it might be carried out as far as practicable, the attention of the Sanitary Inspectors during the latter part of the year was especially directed to this point. Frequent, in many instances daily, visits were made to houses which had been notified, and parents were directed and encouraged to keep their children secluded until the process of desquamation was completed.

As Scarlet Fever gradually declined towards the close of the year, it was succeeded by an outbreak of Measles, especially affecting the Eastern side of the town. The appearance of this disease was unexpected, since it had been present in epidemic form as recently as the end of 1899, and up to the middle of 1900, and therefore according to the law of averages, exemption for some two or three years longer might not unreasonably have been expected.

Once established, it spread with great rapidity, and resulted in 31 deaths, all being those of children under the age of 5 years.

The mortality from Whooping Cough was below the average, a total of 37 deaths having been recorded, of which the greater number occurred towards the beginning of the year.

Diphtheria was the cause of 17 deaths, or less than half the number recorded in each of the two preceding years, a satisfactory result, especially considering the obstinacy with which this disease has for some time continued prevalent in many other of the large towns. In several of the cases certified, the disease ran a very short course, and proved rapidly fatal, death in certain instances being antecedent to notification ; but in many others where the symptoms were much milder and the result favourable, it would seem questionable if the disease were true Diphtheria, and not one of the more severe forms of throat affection which so nearly approach it in appearance, and which consequently present considerable difficulty in the arrival at a definite and correct diagnosis.

The total Zymotic death rate as shewn in Table No. 5 amounted to 3.60 per thousand, but of this at least one half was due to Infantile Diarrhœa, so that there remains a rate of 1.79 per thousand due to the diseases just described.

In dealing with these infectious fevers, and the measures taken to limit the spread of the various forms of disease, the question of isolation must necessarily be a prominent and important one. In this respect, the conditions mentioned in my last Annual Report have

continued unchanged throughout the whole of the past year, in other words the town has been without the means of isolating a single case of any Infectious disease, other than Small Pox and Cholera.

The Harris Wards, in connection with the Royal Infirmary, continue to be unavailable, and the attitude of the Guardians is unchanged as regards the admission of any infectious case within the precincts of the Workhouse Hospital.

Apart from the value of the procedure, but on the grounds of expense and want of home accommodation, the demands for isolation, on the part of relatives and friends, are far less numerous and urgent as regards cases of Scarlet Fever and Measles, than in those of Typhoid Fever or Diphtheria. But with regard to all these diseases, at different times throughout the year, application was made for the removal to hospital of patients who were without proper accommodation or nursing at home, and whose non-removal consequently implied danger to the other inmates of the house, and through them to the general public.

It was of course impossible to find means for hospital isolation where none existed, and in a few of the more urgent cases I had recourse to Section 102 of the Improvement Act of 1880, and was thus able to supply nursing assistance to the patient, as well as support during the term of illness, both for him and those members of the family who for a time, and in consequence of the disease, were excluded from following their employment.

But at the best, this is but an unsatisfactory and makeshift arrangement, and cannot possibly take the place—either as regards patient or public—of a suitably situated, well built, and thoroughly equipped institution.

Towards the provision of such a much needed Isolation Hospital some progress has been made during the past twelve months, but movement in this direction must always be slow, especially if hampered by want of means.

The Sub-Committee, referred to in my last Annual Report as having been appointed by the Health Committee for the purpose of considering this important question, was at the beginning of the past Municipal year again re-appointed.

The result of their deliberations, and the information acquired during their visits to other towns, was embodied in the following Report, presented by them to the Health Committee on 17th September, 1901.

BOROUGH OF PRESTON.

INFECTIOUS DISEASES HOSPITAL.

To the Chairman and Members of the Health Committee.

Gentlemen,

In the early part of 1899, you appointed us a Sub-Committee for the purpose of "considering and making recommendations on the question of provision being made for increased accommodation for the isolation of Infectious cases." We were re-appointed in November of last year—1900.

From time to time the Medical Officer in his Annual—and other—Reports, has referred to the necessity for such accommodation, and in the Report for 1900 still greater stress was laid upon this point; since, as was then shown, the limited accommodation which the Harris Wards had hitherto provided for infectious cases was no longer available.

For the treatment of Small Pox cases the town possesses the Ducker Hospital, which was originally erected in Moor Park to deal with the epidemic of 1888-89. It was afterwards taken down, and stored; and was again erected on its present site at Holme Slack when Small Pox again appeared in 1893. Since that time it has not been in use, but has been maintained in a serviceable condition, and provides sufficient accommodation for dealing with this particular disease.

The Port Sanitary Authority—at the request of the Local Government Board—has provided for the possible introduction of sea-borne Cholera by the erection of a spacious Hospital near to the Dock entrance.

As these two Hospitals can only be used for Small Pox and Cholera, the town has no means of isolating any case of other infectious diseases, no matter of what nature it may be, or to what social class the patient may belong, since the Union Authorities refuse to make provision even for persons in the most indigent circumstance, throwing the responsibility of treating pauper cases upon the Sanitary Authority.

There are at least three distinct conditions in any one of which, or in any combination of which, an Isolation Hospital becomes not only a convenience, but an absolute necessity.

One condition is that in which the patient is without proper nursing or attendance, and where his chances of recovery are greatly minimised by non-removal to hospital.

The second is where, from want of room, the patient cannot be isolated at home, and consequently becomes a source of danger, not only to the other inmates of the house, but also to the general public, with whom these latter are daily, and constantly, brought into contact.

The third is where the patient may possibly be isolated and nursed at home, but where—as in the case of a domestic servant—such a course would entail considerable trouble and expense.

An Isolation Hospital must always be maintained in such a condition as to be fit and ready for the immediate reception of any suitable patient, since much of its value depends upon the facilities it affords for checking, at its first appearance, infection which might otherwise spread, and so before long assume the form of an epidemic.

The three diseases for which provision must be made are Scarlet Fever, Typhoid Fever, and Diphtheria.

The first is a disease which, as regards most of the large towns, makes its appearance at intervals of 3 or 4 years, and which, if it once gets fairly hold, is but little influenced by measures of sanitation, but would seem rather to burn itself out, and so to die away for want of further material.

A good deal has lately been written as to the actual value of Hospital treatment in reducing either the prevalence, the mortality, or the case fatality of Scarlet Fever, and statistics have been advanced to show that certain towns, in which isolation has been thoroughly and systematically carried out, have fared no better, and can show no more satisfactory results than those in which it has been practically wanting.

Possibly, isolation at home has advantages over isolation in hospital, since the latter is rather the aggregation together of a large number of cases, than actual isolation, and there is reason to believe that the return cases from Scarlet Fever, those which arise after the patient's discharge from hospital, and which are the result of infection conveyed from that Institution, frequently assume a more severe form than the average.

But in only a very small proportion of houses can efficient isolation be carried out, and certainly in the majority of cottage houses such a procedure is absolutely impossible. Therefore a case occurring under such circumstances, the patient not unlikely being one of a family of young children, serves as a centre from which the infection spreads to other members of the household, and to other households.

Apart from the benefit to the patient, consequent upon ample air space, good nursing, and careful feeding, the removal of such a case to the hospital might not unlikely be the means of saving many from sickness, some, not impossibly, from death.

Typhoid Fever is a disease seldom absent from large towns, and one which, altogether apart from epidemics due to some specific cause, at certain times of the year, and under favourable climatic conditions, is apt to become widely spread throughout the town.

The poison of Typhoid Fever is conveyed by means of the discharges from the patient's bowels, and in order to prevent the spread of the disease it is essential that these should be carefully disinfected, and promptly dealt with. Neglect of these necessary precautions not unfrequently leads to the poison being communicated to other members of the family, or to those of neighbouring houses. There is therefore a danger to others in an imperfectly nursed case of Typhoid Fever, whilst to the patient himself it is of the utmost importance that he should be carefully watched, tended, and fed.

Diphtheria is a much more infectious disease, the poisonous germs being given off in the patient's breath, by the membrane from the throat, the exhalations from his skin, &c., and it is therefore one in which strict isolation is absolutely necessary.

Fortunately in Preston it is a disease of comparatively rare occurrence, although the past two years have been marked by a decided increase in the amount of sickness and in the consequent mortality, a condition which has however been observed to a much greater extent in many other of the large towns.

These then are the three diseases which would have to be considered, and for which provision would have to be made, in any Isolation Hospital which the Corporation—on behalf of the town—might decide to erect.

One of the most difficult points in a work of this kind is that of obtaining a suitable site. This must be within a reasonable distance, in a healthy situation, removed from dwellings, free from any adjacent nuisance, and approached by a good road. It must be sufficiently elevated to ensure a good circulation of air, and efficient drainage. It must have a good and constant water supply.

As regards the patient, the question of distance is not now so important as in former years, since the improved Ambulances of the present day enable them to be removed in a horizontal position, and for many miles, without danger or fatigue.

But it has a considerable bearing upon the use of the hospital, since the friends of the patients—especially if the latter be children—are much less likely to oppose their removal to it if the Institution is within easy reach, and frequent information of the patient's condition can so be readily obtained.

Moreover where there is no resident Medical Officer, facility for medical attendance must be considered.

In order to make themselves acquainted with the most modern forms of Isolation Hospitals, the members of your Sub-Committee have visited, and carefully inspected, those of Blackpool, Birkenhead, Blackburn and Leicester.

They take this opportunity of acknowledging the courteous reception they had from the various Sanitary Authorities, and the valuable information which they received from the respective Medical Officers of Health.

The Blackpool Hospital may be dismissed in a few words. It is situated a short distance from the town, but the site is low lying, and the Wards are near to the highroad and to neighbouring houses. The administrative block—near to the entrance—was formerly a dwelling house.

The Pavilions are 2 in number, and there are also the usual outbuildings.

The North Pavilion is built on the Local Government Board's Plan, divided into two halves, with verandah and entrance on opposite sides. Each half has 2 Wards and Kitchen, 1 Ward for 3, and 1 for 2 beds, giving 2,400 cubic feet per head.

The South Pavilion consists of one Ward for 6, and 1 for 4 beds, with Kitchen, Bathroom, and attached Water-closet. The allowance of air is 1,200 cubic feet per head.

The capital cost up to date is £6,479.

The Birkenhead Hospital is more interesting, since as regards size and construction it would appear to be such a one as is suitable for Preston. It is situated upon rising ground, and in every respect the site appears to be a desirable one. It consists of an administrative block, 3 storeys in height, situated near the main entrance.

There are 4 double Ward Pavilions, and 1 Observation Ward Pavilion. The accommodation thus provided for patients is 56 beds and 12 cots.

Each pavilion stands quite detached, and there is no corridor or covered passage connecting them with the administrative block.

There are the usual additional buildings, *e.g.* Laundry, Mortuary, Van House and Stable, Disinfector, &c.

The floor space for each patient's bed is 156 superficial feet, and the air space 2,028 cubic feet.

The cost of the buildings is about £13,000, and that of the land and "walling in" £5,000. The furnishing, including Surgery fittings and drugs, amounts to £1,214.

The Staff consists of a Matron, a Night Superintendent, 4 Charge Nurses, and 10 Assistant Nurses.

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In addition there is a Cook, Kitchen-maid, 2 House-maids, 4 Ward-maids, 3 Laundresses, 2 Gardeners, and 2 Porters.

During the year 1898, the number of patients was 405, and the cost for the year was £3,587.

Several points of construction, and certain details of fittings and arrangements appeared capable of improvement, and an inspection of the more recently built Hospitals of Blackburn and Leicester confirmed our opinion.

The Leicester Hospital is a very large Institution which, when completed, will be fitted with all modern requirements.

It is situated on the outskirts of the town, and is approached from the main road.

It stands upon 14 acres of ground, a portion of a Parish of 110 acres, purchased by the Corporation at a cost of £107 per acre.

The buildings consist of Administrative block and Porter's lodge, and 7 blocks for patients, with all the usual Offices and outbuildings, so that the Institution is a self-contained one, generating its own electricity, and having its own Sewage Farm. The cost of the building was £48,000, and that of Furnishing £8,000.

The Blackburn Hospital stands upon rising ground, some little distance from the town. It is as yet unfinished, but as regards the arrangements of the pavilions it is in many respects similar to that of Leicester.

Since neither the extent nor the situation of the site has yet been decided upon, it becomes a very difficult matter to estimate, even in rough figures, the probable cost of such an Isolation Hospital as would be suitable for, and would meet the requirements of a town like Preston.

While the site should be sufficiently large to admit of any extensions which might be required in the future, it should be remembered that it is cheaper in the first instance to build in excess of the actual requirements of the present day, than it is to build in the first instance on a small scale, and afterwards to make such additions as occasion may demand.

Having carefully considered the whole question, we are of opinion that—

First. An Isolation Hospital, with accommodation for from 60 to 70 patients (being somewhat less than the Local Government Board's suggestion), is a necessary adjunct to the sanitary equipment of the town.

Second. A site of from 8 to 10 acres would be required.

Third. A capital outlay of at least £20,000 would be entailed, and the annual cost of maintenance would be from £2,000 to £3,000.

We would therefore ask you to adopt this Report, and endeavour to obtain the permission of the Council to take such steps as are necessary to give effect thereto.

27th August, 1901.

This in due course was submitted to the Council; and by a Resolution dated 26th September, 1901, the principle was affirmed that an Isolation Hospital was a necessity for the town, and it was resolved that effect should be given to the recommendations contained in the Report in question.

Since the Rural Sanitary Authority and certain of the outlying townships were also arranging for the erection of a similar Institution, it was considered possible that some arrangement might be arrived at by which one Hospital could jointly serve for the Borough and the various Authorities to which reference has been made.

It is at this point that the matter at present stands, and pending the result of the deliberations in progress, I leave the subject, simply stating that the past year has given abundant evidence that an Isolation Hospital is an essential part of the town's defence against infectious disease, and that year by year Public opinion is more strongly adopting this view.

In addition to the diseases of an infectious character already dealt with, there are two—Puerperal Fever and Erysipelas—which, though not to any great extent, have contributed to the general list of mortality. From the first named—Puerperal Fever or Septicæmia—12 deaths were recorded, so that with 3 exceptions all the cases reported under the Compulsory Notification Act terminated fatally. In former Reports I have adverted to the terrible nature of this disease and to the unfortunate circumstances which must be attendant upon each death, since the victim must of necessity be in the very prime of life, and because she so frequently leaves behind her children, too young to recognize, but not to feel, the loss they have sustained.

In some instances the primary cause of Infection could be ascertained, in others it could only be conjectured, or remained altogether undiscovered, but although at times certain cases occurred simultaneously or within a short interval of each other, they were in different parts of the town, and it is satisfactory to find that in no instance could the infection be traced as having been conveyed from one patient to another. Although the subject is one more suitable for a Medical paper than a Sanitary Report, there are two points in connection with this matter to which I would draw attention.

The first is that isolated cases of Puerperal Fever are more common than they were some years since. This I believe to be in a great measure due to the fact that the patient is now-a-days more impatient than formerly, in other words, is less disposed to abide the pain and duration of natural labour, and apt to demand the relief afforded by artificial means.

In the case of the factory operative this may in some measure be due to a decreasing stamina, itself the effect of the same occupation carried on from generation to generation, but the result is that in this way a natural function is converted into a form of operation. But on the other hand there are fortunately fewer of those consecutive cases of Puerperal Septicæmia which formerly were the dread of the Accoucheur and general Practitioner.

This can only be ascribed to a better knowledge of the laws of Hygiene, and to greater precaution on the part of the Doctor, Midwife, and Nurse.

With advanced education as regards the methods of infection, with more rigorous cleanliness, and with an increased use of disinfectants, it may be hoped that still further improvement will be made in this direction.

From Erysipelas the deaths were not numerous, only amounting to 2, whereas notifications were received of 82 cases of illness. As might be inferred many of these cases were of a trivial nature, but the possible connection between the poison of Erysipelas and Puerperal Fever would alone justify the time spent in their investigation.

Diarrhœa accounted for 200 deaths, a number almost identical with that from the same cause during the preceding twelve months, but, allowing for increase of population, considerably below the average record of past years. The deaths were as usual almost entirely those of young infants, 176 being registered under the age of twelve months, 14 between the ages of 1 and 5 years, and the remaining 10 in adults, or persons above the middle period of life. The epidemic commenced at an earlier date than usual, the four foot ground temperature having attained to the height of 56 degrees by the middle of July, rising to 60 degrees on August 4th, during the whole of which month the disease continued in force, accounting for 107 deaths during that period alone. With the beginning of September, and with a rapidly falling temperature, the mortality soon decreased, and by the middle of that month the outbreak was practically over. A glance at the Plan, upon which are marked these Infantile deaths from Diarrhœa, will show that the greatest relative mortality was in the same districts as in former years, and that these with slight exceptions constitute the oldest and most crowded parts of the town. On the other hand Avenham, Christ Church, Ashton, and the better parts of St. John's, Deepdale, Park, and Fishwick Wards escaped with a comparatively slight amount of mortality. The difference that may occur between different years is well shown by the appended Chart, from which it will be seen that the greatest number of deaths in any one fortnight is 48, whereas in 1899 the number was 85. A great number of Cards, giving instructions as to the cause, prevention, and treatment of Infantile Diarrhœa were again issued in those parts of the town where they seemed most required, and these were personally distributed by the Sanitary Inspectors, who, where necessary, read over their contents, and impressed upon parents the importance of following the advice therein contained.

As regards Bronchitis and Inflammation of the Lungs the mortality was in both cases below the average, the number of deaths registered being 258 and 135 respectively. Although the mortality from these causes was as usual the heaviest during the winter months,

i.e. at the beginning and close of the year, it never became excessive, and in respect to these diseases the returns compare favourably with those of former years.

Influenza also, so frequently the forerunner and origin of Pulmonary disease, never attained anything like the severity which marked its progress through the early part of 1900, and in 19 instances only was this recorded as the primary cause of death.

Consumption, Phthisis, or Tubercular disease of the Lungs accounted for 116 deaths, and in respect to this disease the mortality was considerably below the average of former years. As regards the distribution of the disease, the difference between the various Wards is but slight, the deaths being very evenly distributed over all parts of the town, and any variation which may exist is probably rather due to the general condition and occupation of the people than to the nature of the subsoil upon which they lived. Other forms of Tubercular disease were the cause of 147 deaths, of which the great proportion were those of young children, many of whom suffered from Marasmus, Hydrocephalus, &c., from the time of their birth. No death was registered from Pleurisy, and only 1 from any form of Respiratory disease, other than those already mentioned.

Diseases of the Heart and its vessels, occasioned 211 deaths, of which the great majority occurred in persons in the middle or advanced period of life.

Cancer and the various forms of malignant disease proved fatal in 77 instances, of which a great majority were females.

On the other hand most of the 40 deaths registered as due to Alcoholism or Cirrhosis of Liver, were males, in most cases between the ages of 40 and 55 years.

Of the 14 deaths tabulated under the heading of Venereal Diseases, all, with two exceptions, were those of very young children, but this probably does not represent the actual number of deaths more or less directly connected with this form of disease.

Various forms of accident occasioned 57 deaths, whilst 4 and 1 were the number of victims to Suicide and Murder.

To Old Age or Senile Decay 103 deaths were attributed, a number somewhat larger than that generally recorded from this cause.

The total number of deaths under the age of one year was 737, thus representing 33·30 per cent., or exactly one-third of the total mortality at all ages. Of these infants, 86

were prematurely born. but an additional 313 died shortly after birth from such diseases as Atrophy Convulsions, or General Debility. Diarrhœa accounted for 176 deaths, and Bronchitis, or Pneumonia for 116, the remainder being caused by the various forms of Zymotic disease, or accident.

Estimating the Infantile mortality by its relation to the number of Births, it will be found that out of every thousand children born, 218 failed to survive the first twelve months. This Infantile Death-rate shows an improvement over that for past years, but is still, with the exception of Burnley, the highest of any of the thirty-three large towns.

I have again indicated, upon a separate Plan, the position of these deaths, and the remarks made with regard to the Diarrhœal deaths are equally applicable in the present case. Indeed this must almost of necessity be so, since 176 of the deaths were caused by Diarrhœa, and these are again marked on the Plan in question.

The insanitary conditions, social and structural, which, given a sufficiently high temperature, bring about an attack of Diarrhœa, are always at work in these localities, and assist in rendering other diseases especially fatal to infantile life.

The Sub-Committee appointed in 1900 to enquire into this important question, has continued its labours throughout the past year, and has taken the evidence of representatives of various sections of the community, who it considered would be able to throw additional light upon the causes and remedies of this evil. The Report embodying the information thus obtained will no doubt in due course be submitted for your consideration.

The total number of deaths for the year, at all ages, and from the various diseases which I have now mentioned, amounted to 2,213; and represent upon a population of 113,117, a rate of 19.56 per thousand. The deaths registered in the several quarters of the year, were 533, 521, 605, and 554, the increase in the third quarter being due to the prevalence of Diarrhœa.

The difference which may be noted between several of the Tables is due to the fact that while in the ordinary ones I deal simply with the deaths which have occurred within the Borough boundaries, in those prescribed by the Local Government Board, the deaths within the Workhouse, situated in Fulwood, are also included. These amount to 149, and increase the annual rate to 20.88 per thousand. Since, however, the Town has not the advantage of the greater healthiness of a better class population like that of Fulwood, and is not even credited with the population of the Workhouse, I look upon these deaths as entirely outside the mortality of Preston.

The Births registered during the year number 3,418, and are equal to a yearly rate of 30·21 per thousand, while the natural increase—the excess of Births over Deaths—represents a gain of 1205 lives.

The Birth Rate, though much below the average of former years, is higher than that recorded during either of the past two years, and in this respect forms a satisfactory exception to the returns for the whole Kingdom, throughout which the rate continues to decline. This is a subject closely connected with that of Infantile mortality, and I therefore leave it to be dealt with in the Sub-Committee's Report.

The increase in the number of the Wards, and the re-arrangement of their boundaries entailed a change in the Localities allotted to the Sanitary Inspectors, and also a re-distribution of those duties which may be regarded as supplementary to the supervision of their districts.

To Inspector Jackson was allotted No. 1 District, comprising Deepdale, Fishwick, and Ribbleton Wards, altogether containing a population of 24,754. The area is a large one, and with the building operations on the Lutwidge Estate, and to the Eastern side of the town, the population may be expected steadily to increase. The charge of the Meteorological instruments, their daily reading, and the recording and tabulation of the results, also form part of his duties.

Inspector Morgan was given charge of Trinity, Park, and Moorbrook Wards. The District has a population of 34,770, and comprises a good deal of the oldest part of the town, and one consequently offering a large field of work, and great scope for improvement. From the returns it will be seen that during the year a good deal has been done in this direction.

Inspector Baron retained a large portion of his former district of St. Peter's Ward, which, with the addition of Maudland and Ashton Wards, forms his present No. 3 District. He also continues to be Inspector to the Port Sanitary Authority, for which appointment his experience of past years renders him especially suitable.

Inspector Livesey took charge of No. 4 District—St. John's, Avenham, and Christ Church Wards—extending from London Road to the Ribble on the West. In the first named Ward is a good deal of both old and new property, the former containing most of the Common Lodging Houses, and the latter represented by the growing Frenchwood

Estate. He also efficiently carries out the work of Canal Boat Inspector, and supervises the wholesale Fish Market, the latter duty requiring attention in the early hours of the morning.

Inspector Marsden's duties are those of inspecting all meat killed both at the Public Abattoir, and the Private Slaughterhouses. These latter are now very greatly reduced in number, and in their improved condition are vastly superior to the average Private Slaughterhouse before the present arrangement was arrived at.

He is also Inspector under the Food and Drugs Adulteration Act, and is responsible for the purchase of samples, and their conveyance to the Laboratory of the Public Analyst.

In addition, he is Inspector under the Contagious Diseases (Animals) Act, the result of his work in this direction being shown in a separate Table, No. 11.

By the above arrangements, it was found possible, even in the face of the increased duties devolving upon the Health Department, to dispense for the present with any addition to the staff, and I have confidence in stating that the Scheme works well, a result borne out by the tabulated statement as to the amount of work accomplished during the year.

The consideration of the subject of Infantile Mortality brought up the question as to the advisability of increasing the Sanitary Staff by the appointment of certain Female District Visitors, whose duties would be, under the control and supervision of the Medical Officer, to visit houses in the poorer parts of the town, and by advice and practical example, endeavour to raise the standard of cleanliness and sanitation.

Their services would be especially useful in giving instruction as to the management of young children, particularly during time of illness, and in abolishing those insanitary household conditions which are so frequently the result of ignorance and want of care. But the value of such instruction depends entirely upon the spirit in which it is received, and in order that its reception may be beneficial it must be given with tact, in a kindly manner, and with consideration for those shortcomings which too often have become habitual.

Anything like illjudged or unnecessary interference with domestic matters would be resented in the home of a Lancashire operative; whereas a little judicious help, given especially in the trying time of sickness, would be gratefully acknowledged and received. In this way evil habits would gradually be eradicated and new ones formed, which must of necessity tend to increase the health and happiness of the household. There is at present

amongst many Sanitary Authorities a growing desire to make use of Female assistance, and altogether the subject is one worthy of the most careful consideration.

Table No. 9 gives as usual a summary of the work done during the year, and, in a great measure, the figures speak for themselves. Still, there are a few points about which a word or two of reference and explanation may be given. One of the chief works towards the improvement of the town—the conversion of the privy middens to the water carriage system—has progressed steadily, and rapidly, especially when it is considered that—as already pointed out—the attention of the Inspectors was, during the latter part of the year, almost entirely given up to dealing with the epidemic of Scarlet Fever. In addition to the 1068 notices served for these conversions, advantage was taken of the powers conferred by the Act of 1900, to require the flagging of 1114 back yards. The dangers of the ordinary pebble pavement, and of a consequently polluted subsoil, have been too often dealt with to require further explanation, and, in the substitution of an impermeable yard surface, one great step has been taken towards the prevention of Infantile Diarrhœa. No doubt all these alterations entail considerable expense upon the owners of cottage property, but the improvement is unmistakable; and with a properly constructed water-closet, a dry ashpail, and a well flagged yard, there can no longer be any excuse for dirty surroundings about a household.

The drawing up and serving of these notices for conversion is often only a small portion of the work devolving upon the Sanitary Inspector, since, if the property owner allows the notice to lapse, or prefers that the Corporation should do the work, there follows the preparation of a lengthy Specification, the obtaining of tenders, and the supervision of the work until satisfactorily completed.

Notices were served for the closing of 15 houses, which were in such a condition as to be unfit for human habitation, while in the case of 30 others, which were built back to back, or were without through ventilation, a similar course was adopted, until such time as they were put into a habitable condition.

In addition to 143 house drains, which, on account of sickness, or for other causes, were tested, a thorough examination was made of the drainage of the various schools. This was an important work, in many cases extending over days and even weeks, and one rendered all the more difficult by the want of reliable records of the existing drainage.

Certificates were received of 2,070 cases of Infectious Disease, and 5,212 visits were paid to infected houses. The increase in the number of cases notified over previous years was due to the prevalence of Scarlet Fever, and to the provision in the Notification Act

which became compulsory in 1900, by which it is provided that every case occurring in the same house may be separately reported. Houses to the number of 1,635 were disinfected after recovery or death from some form of infectious disease, and the same precaution was carried out in the case of 14 of the Public Schools, though as regards the majority of these buildings, disinfection was not completed until after the close of the year, and they are therefore not included in the present returns.

By the Factory and Workshops Act, 1900, a good deal of additional work was thrown upon the Health Department, and during the year a great number of work places have been visited, their cubical contents measured, and various other particulars obtained, in order that a complete record may be entered in the Register with which the Inspector of each district has been supplied. At the same time attention has been given to the cleanliness, ventilation, and drainage of these premises, and, where necessary, additional sanitary accommodation has been provided. The improvements thus carried out in the work places of the working classes, combined with those at their homes, must have a markedly beneficial effect upon their health and comfort.

Inspection has been made of the various Cowsheds and Dairies, with the result that 6 have been closed ; and in others improvements have been effected in the drainage, lighting and ventilation, and especially in the provision of Milk-houses, so as to ensure proper cleanliness as regards the milk and milk vessels. This can only be done by having a special building distinct and apart from the house and household matters.

Constant attention has been given to the Common Lodging Houses, and advantage has been taken of change of ownership or tenancy to secure improvements in their general condition, and increased airspace to the occupants of the dormitories. The possible introduction of Infectious Disease through these channels has not been lost sight of, and the necessity has been impressed upon the caretakers of at once reporting any case of sickness amongst the inmates.

The Canal Boats have been regularly visited, and the following Report dealing with their condition during the year has in due course been forwarded to the Local Government Board :—

CANAL BOATS ACTS, 1877 AND 1884.

COUNTY BOROUGH OF PRESTON.

In accordance with Sec. 3 of the Act of 1884, I beg to submit the Annual Report for the past year of 1901, dealing with the Registration and general condition of those Boats which during that time have been working on that portion of the Preston, Lancaster, and Kendal Canal, situated within the jurisdiction of this Sanitary Authority.

The duties of inspection have been carried out by Inspector H. Livesey, who also has charge of one of the four Sanitary Districts of the town. The terms of his appointment continue as before, no special remuneration being given for the duties of Canal Boat Inspection.

All the Boats visiting the town have been examined, a total of 68 inspections having been made during the year.

These inspections refer to the 33 Boats at present on the Register, as well as to 2 Boats registered at Lancaster, but plying upon this portion of the Canal.

In eight instances there was found to be an infringement of the Acts and Regulations, but none of these were of a serious nature, and they were all put right without there being any necessity for recourse to legal proceedings.

Although Scarlet Fever was prevalent in the town throughout the whole of the year, and an outbreak of Measles occurred towards the latter end, no case of Infectious Disease appeared upon any of the Boats, and therefore none were detained for cleansing or disinfection. The usual statistical supplement is appended.

H. O. PILKINGTON,

January 15th, 1902.

MEDICAL OFFICER OF HEALTH.

The number of samples purchased for analysis, under the Food and Drugs Adulteration Act was 239, and considerably exceeded that dealt with in any previous year. The nature of the articles and the result of the Analyst's examination are all set forth in Table No. 12 from which it will be seen that 219 were returned as genuine, and 20 as having been adulterated. In 8 of the latter instances further proceedings were taken, and penalties varying from payment of costs to a fine of £1 and costs were obtained. In pursuance of the enquiry as to the presence of Arsenic in Beer, further samples of Beer, Stout, Yeast, Malt and Finings were submitted to examination, but while the majority were found to be quite free, in none was there more than a mere trace of the metal to be discovered.

Amongst the other cases in which it was necessary to have recourse to legal proceedings was one in which a Butcher was summoned for using certain unlicensed premises as a Slaughter-house. An offence of this kind not only creates a possible nuisance in the neighbourhood, but also affords opportunity for the preparation and sale of unsound meat, and although the penalty imposed—40/- and costs—was not a heavy one, it is satisfactory to know that a conviction was obtained.

A similar penalty was the result of a summons taken out on account of a nuisance caused by a manure manufactory in the neighbourhood of Ribbleton.

Imprisonment for 21 days, without the option of a fine, was the sentence passed upon two Fish Hawkers who were detected whilst in the act of selling certain unsound fish. The nature of the offence was rendered all the worse by the fact that the fish in question had been condemned and put aside for destruction by the Sanitary Inspector in the early part of the same morning upon which it was unlawfully removed, and afterwards publicly exposed for sale.

Amongst other works having an important bearing upon the sanitary condition of the town, although more immediately connected with the department of the Borough Surveyor, must be mentioned the flagging and sett paving of the streets.

These improvements have been vigourously carried out during the year, with the result that 29,000 square yards of flagging, and 24,000 square yards of sett paving have been completed.

Works of this description are intimately connected with the Health Department, not only because the requisite notices are made out and served upon the property owners by the Sanitary Inspectors, but also because of the influence which they have upon the appearance of a town, and the comfort and health of the inhabitants.

A street with a broken irregular surface does not admit of efficient scavenging, whereas the neat and cleanly appearance of a house abutting upon a street well paved and flagged acts as an incentive to greater cleanliness about the back yard and other parts of the house.

Recent alterations to the Destructor, situated upon the Marsh, will now permit of a much larger quantity of refuse being therein dealt with, and will have a correspondingly beneficial effect by reducing the necessity for making use of "tips." These are at all times objectionable, at the present from the nuisance caused by the exposure of offensive matters, and in the future from the dangers to which they give rise when the land comes into use for building purposes.

The sanitary progress of a town, apart from its growth, demands increased appliances for rendering harmless the refuse which is constantly forming, and it is therefore satisfactory to know that the plans for a new, and properly equipped Destructor, are at present under consideration.

With this will be combined a new Disinfecting Station—to replace, or supplement, the present somewhat antiquated one—together with an extension of the Stables and general Store Yard.

Increased Market accommodation for the sale of Fish, Poultry, Butter, Eggs, &c., so much required both by the salespeople and the public, is also engaging the attention of the Committee having charge of these matters.

The water supply of the town continued abundant throughout the year, and, obtained from unpolluted moorland gathering ground, was in every respect suitable for domestic purposes.

An addition of about twenty million gallons has been made to the storage capacity.

The rainfall for the year was below the average, only amounting to 28.92 inches. The fall was much the heaviest towards the close of the year, a depth of 6.80 inches being recorded in November alone. On the 11th and 12th of that month the fall was respectively 1.75 and 2.63 inches, or a total of 4.38 in the two days alone.

Towards the end of July I had the privilege of attending the Sanitary Congress held at Eastbourne under the auspices of the Institute of Public Health. Although unable to be present at the early part of the meeting, I heard many papers and discussions all having a bearing upon Sanitary progress, and which were therefore a source of interest and instruction to the Health Officer. I had also the honour of contributing a paper upon "Household Sanitation" which will shortly be reproduced in the Journal of the Institute.

In concluding this Report for 1901, I would express a hope that favourable weather, freedom from Infection, and general prosperity may combine to render the present Guild Year of 1902 remarkable even amongst its many successful predecessors.

H. O. PILKINGTON,

April 23rd, 1902.

MEDICAL OFFICER OF HEALTH.

PORT SANITARY.

The Sanitary history of the Port throughout the year has been a somewhat uneventful one.

The number of Steamships inspected was 720, and of Sailing Vessels 114, both figures being somewhat below those for the preceding year.

The presence of Bubonic Plague, both abroad, and in certain English Ports, led to a careful scrutiny of all vessels which had sailed from foreign Ports, or which might, nearer home, have been in contact with the infection.

Upon such Vessels guards were ordered to be placed upon the cables to prevent the passage of rats to the shore, while in the case of large Vessels coming up the river for the purpose of being broken up a preliminary destruction of the rats was enforced.

Certain Vessels, putting into the Boghole at Southport for the purpose of being lightered, were inspected whilst there, and prior to their passage up the river.

A nearer danger was the possible introduction of Small Pox by means of the smaller Coasting Vessels trading with such Ports as Glasgow or Liverpool, where the disease was known to be present. Every precaution was taken with regard to these, but fortunately at no time did any form of Infectious disease appear amongst the Crews.

Of the total number of vessels inspected, 149 were found to be in some respect defective. In many cases the fault was due to the action of the Crew, and the remedy therefore also remained in their hands; but there was a general disposition on their part, as well as on that of the Captains and Owners to carry out the requirements of the Port Inspector.

Table No. 13 gives a detailed list of the defects which have thus been remedied.

H. O. PILKINGTON,

Medical Officer of Health

Port Sanitary Authority.

April 23rd, 1902.

TABLE No. 1.

Number and Causes of Deaths at different Ages, for the Year ending 31st December, 1901.

Cause of Death.	Under 1 Year.	1 to 5	5 to 15	15 to 25	25 to 65	65 and over	Total.	Corres- ponding year 1900.	Corres- ponding year 1899.	Corres- ponding year 1898.	Average for six years.
Small Pox .. . . . . .	...	...	...	...	...	...	...	...	...	...	...
Fever..... . . . .	...	1	3	8	12	...	24	44	37	42	34·13
Searlatina. &c.....	3	55	23	2	3	...	86	32	11	4	23·50
Measles	7	24	...	...	...	...	31	121	41	1	79·84
Diarrhœa	176	14	...	...	6	4	200	199	298	279	234·16
Whooping Cough.....	18	19	...	...	...	...	37	64	53	48	45·17
Diphtheria	2	13	1	...	1	...	17	42	36	8	19·63
Croup	1	4	3	...	...	...	8	20	33	10	17·50
Consumption ..... . . . .	...	...	7	21	87	1	116	154	140	128	139·64
Bronchitis.....	86	45	1	...	69	57	258	369	315	240	290·50
Inflammation of Lungs	30	33	6	7	46	13	135	174	136	120	149·50
Teething, Premature Births & Debility }	409	66	10	...	...	...	485	596	566	514	553·50
Old Age ..... . . . .	...	...	...	...	6	97	103	87	99	61	88·36
Violence, &c.	2	8	12	2	29	11	64	49	64	49	56·00
Other Diseases	3	10	23	36	415	162	649	685	663	603	655·17
Total.....	737	292	89	76	674	345	2213	2636	2492	2107	2386·60

TABLE No. 2.

Number and Causes of Deaths in each Month of the Year ending 31st December, 1901.

Cause of Death.	January.	February	March.	April	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Small Pox .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Fever	3	2	2	1	1	...	1	2	4	3	3	2	24
Scarlatina	6	4	7	5	9	10	6	10	5	11	10	3	86
Measles .....	...	...	...	...	...	...	...	...	...	...	6	25	31
Diarrhœa	2	...	3	2	...	2	34	107	33	6	8	3	200
Whooping Cough.....	10	9	1	4	6	4	...	2	...	1	...	...	37
Diphtheria.....	1	3	1	1	3	1	1	3	1	...	2	...	17
Croup .....	...	2	...	1	1	2	1	...	...	...	...	1	8
Consumption	9	5	10	7	7	13	11	8	13	12	13	8	116
Bronchitis	32	26	36	29	11	20	12	5	9	12	45	21	258
Inflammation of the Lungs	14	8	7	9	11	14	10	5	10	10	29	8	135
Teething Convulsions, &c.	32	37	52	46	33	41	38	52	32	27	61	34	485
Old Age.....	5	9	10	8	10	7	6	7	11	7	7	16	103
Violence, &c.....	5	3	4	7	6	10	7	4	4	3	4	7	64
Other Diseases	55	50	68	55	50	74	43	59	49	43	61	42	649
Total.....	174	158	201	175	148	198	170	264	171	135	249	170	2213

TABLE No. 3.

Number and Causes of Deaths in each Ward for the Year ending 31st December, 1901.

Wards.	Small Pox.	Fever.	Scarlatina, &c.	Measles.	Diarrhoea and Dysentery.	Whooping Cough.	Diphtheria.	Croup.	Consumption.	Bronchitis.	Inflammation of Lungs.	Teething. Pre-mature Births & Debility	Old Age.	Violence, &c.	Other Diseases.	Total Deaths	Rate per 1000 per annum.	Total Births	Rate per 1000 per annum.	Population
St. John's Ward	3	12	3	14	11	1	...	13	24	10	43	8	4	66	212	18.58	378	33.13	11409
Avenham Ward	1	3	5	1	1	1	3	9	9	16	9	6	46	110	14.94	132	17.92	7363
Christ Church Wd.	...	3	1	3	11	...	2	2	10	14	12	40	8	2	51	159	18.16	254	29.01	8753
Ashton Ward	2	...	...	...	6	14	8	26	6	7	29	98	12.74	210	27.31	7688
Maudland Ward	1	5	...	21	...	2	...	8	15	4	39	4	1	30	130	16.70	213	27.36	7783
St. Peter's Ward	2	6	1	21	2	4	1	8	26	16	47	10	1	68	213	20.10	352	33.21	10597
Moor Brook Ward	1	13	...	25	7	1	1	8	16	5	47	13	...	46	183	20.15	315	34.69	9080
Park Ward	3	8	2	34	5	1	2	17	43	13	58	11	6	87	290	19.87	492	33.71	14592
Trinity Ward.....	...	7	9	5	15	2	2	...	11	39	18	60	11	5	59	243	21.89	338	30.45	11098
Deepdale Ward	3	9	5	11	4	...	...	12	13	12	39	3	1	44	156	17.36	272	30.26	8986
Ribbleton Ward	11	6	26	2	3	1	11	21	13	40	9	3	55	201	23.63	266	31.27	8506
Fishwick Ward	10	3	15	3	...	...	9	17	11	27	9	2	37	143	19.69	195	26.85	7262
Gaol, Infirmary, &c.	...	1	1	...	...	...	...	...	...	7	4	3	2	26	31	75	...	1	...	...
Total.....	...	24	86	31	200	37	17	8	116	258	135	485	103	64	649	2213	19.56	3418	30.21	113117

Death Rate per annum, per 1000 of the Population for the Year.....19.56
Average Death Rate per annum, per 1000 of Population, for the past six years...20.60
Do. Do. for 10 years.....21.33
Death Rate per annum, per 1000 of Population, of Children under one year..... 6.51
Per centage of Deaths under one year, to total Deaths for the Year33.30
Do. Do. for 10 years.....35.02

TABLE No. 4.

Number of Deaths in each Ward during each Month of 1901.

WARDS.	January.	February.	March.	April.	May.	June.	July	August.	September.	October.	November.	December.	Total.
St. John's Ward	17	18	18	19	21	12	15	18	20	14	24	16	212
Avenham Ward.....	10	5	9	4	8	16	12	10	7	8	12	9	110
Christ Church Ward.....	16	8	10	14	15	13	10	17	13	11	17	15	159
Ashton Ward	5	8	8	10	7	8	4	12	6	3	18	9	98
Maudland Ward	5	8	9	6	7	18	11	22	13	10	10	11	130
St Peter's Ward	19	14	23	15	8	18	19	27	15	12	29	14	213
Moor Brook Ward	10	16	23	11	13	14	14	23	16	12	22	9	183
Park Ward	25	24	26	19	11	26	25	40	22	18	41	15	292
Trinity Ward	22	13	25	26	13	22	21	26	12	11	26	24	241
Deepdale Ward.....	9	12	18	14	11	12	8	13	9	15	19	16	156
Ribbleton Ward	16	17	7	18	16	15	17	27	21	11	15	21	201
Fishwick Ward	13	9	14	15	13	14	7	23	12	8	11	4	143
Gaol, Infirmary	7	6	11	4	5	10	7	6	5	2	5	7	75
Total.....	174	158	201	175	148	198	170	264	171	135	249	170	2213

TABLE No. 5.

Birth Rate, Death Rate, and Analysis of the Zymotic Death Rate in 33 of the largest English Towns for the year ending December 31st, 1901. Compiled from the Registrar-General's Returns.

Name of Town.	Population	Birth Rate.	Death Rate.	ZYMOTIC DEATH RATE.								Deaths under one year to 1,000 Births
				Small Pox	Meas-les.	Scar-let Fever	Diph-theria	Who'p-ing Cough	Fever	Diarr-hœa	Total	
London	4,543,757	28·8	17·5	0·05	0·43	0·12	0·29	0·35	0·12	0·86	2·24	149
West Ham.....	268,868	33·5	17·1	0·01	0·65	0·11	0·62	0·38	0·30	1·93	4·04	170
Croydon	134,665	26·4	12·8	0·00	0·15	0·00	0·16	0·18	0·08	0·91	1·51	140
Brighton	123,668	24·0	16·4	0·00	0·03	0·00	0·51	0·20	0·04	0·89	1·75	161
Portsmouth ...	189,907	27·5	17·5	0·00	0·43	0·08	0·37	0·12	0·21	1·64	2·87	162
Plymouth	107,974	27·1	18·1	0·01	0·09	0·00	0·11	0·32	0·18	0·81	1·52	148
Bristol	329,831	27·0	15·9	0·00	0·02	0·11	0·37	0·59	0·12	0·44	1·67	131
Cardiff	165,308	30·0	14·8	0·00	0·01	0·17	0·46	0·47	0·04	0·44	1·61	148
Swansea	94,618	29·1	17·9	0·00	0·05	0·09	0·18	0·88	0·17	0·43	1·83	174
Wolverhampton	91,467	32·1	17·0	0·00	0·47	0·10	0·12	0·32	0·18	1·16	2·37	162
Birmingham ...	523,284	32·0	20·5	0·00	0·58	0·30	0·16	0·42	0·21	1·46	3·15	187
Norwich	111,997	28·1	18·5	0·00	1·00	0·05	0·26	0·03	0·12	1·24	2·72	182
Leicester	212,498	28·6	15·6	0·00	0·08	0·03	0·71	0·33	0·09	1·31	2·56	176
Nottingham ...	240,400	28·2	18·4	0·00	0·40	0·04	0·12	0·41	0·34	1·50	2·84	192
Derby	106,076	27·5	15·0	0·00	0·00	0·15	0·19	0·27	0·20	0·97	1·79	154
Birkenhead.....	111,203	28·5	18·3	0·00	0·41	0·09	0·25	0·53	0·23	1·39	2·91	184
Liverpool	686,332	32·8	22·7	0·00	0·70	0·27	0·27	0·24	0·24	1·96	3·71	189
Bolton	168,748	27·6	18·2	0·00	0·65	0·29	0·16	0·28	0·22	1·41	3·03	171
Manchester ...	544,934	28·9	22·0	0·00	0·54	0·23	0·24	0·40	0·15	1·84	3·42	203
Salford	221,526	29·1	21·6	0·00	0·51	0·48	0·63	0·41	0·33	1·90	4·27	209
Oldham	137,382	23·8	19·0	0·00	0·53	0·29	0·09	0·20	0·06	1·10	2·29	174
Burnley	97,295	26·0	18·1	0·00	0·02	0·11	0·40	0·30	0·05	1·81	2·70	225
Blackburn	127,714	26·0	19·1	0·00	0·77	0·47	0·49	0·16	0·14	1·56	3·61	194
Preston	113,117	29·9	20·6	0·00	0·27	0·78	0·15	0·34	0·22	1·81	3·60	218
Huddersfield ...	91,998	22·4	16·2	0·00	0·15	0·06	0·06	0·02	0·18	0·89	1·37	132
Halifax	105,113	22·3	16·3	0·00	0·29	0·16	0·17	0·18	0·12	0·46	1·40	127
Bradford	280,161	22·8	16·6	0·00	0·05	0·13	0·11	0·45	0·20	0·88	1·84	167
Leeds	430,489	29·9	19·1	0·00	0·57	0·18	0·40	0·33	0·18	1·44	3·12	188
Sheffield	382,129	33·3	20·5	0·00	0·56	0·15	0·64	0·34	0·31	2·10	4·12	201
Hull	241,622	33·2	18·5	0·00	0·50	0·07	0·17	0·40	0·27	1·80	3·24	174
Sunderland ...	146,937	35·2	21·2	0·00	0·42	0·29	0·20	0·72	0·29	1·77	3·72	182
Gateshead	110,492	36·6	21·5	0·00	0·77	0·13	0·11	0·42	0·10	2·54	4·10	195
Newcastle	215,516	31·3	21·3	0·00	0·31	0·19	0·15	0·49	0·07	1·24	2·47	178

TABLE No. 6.

The estimated Population, Number of Births and Deaths, Rates per thousand, and natural increase in the Borough, for each year since 1841.

Years.	Estimated Population	No of Deaths.	Death Rate per 1000.	No. of Births.	Birth Rate per 1000	Natural Increase
1841	51,000	1508	29.57	1974	38.70	466
1842	52,840	1550	29.33	1944	36.79	394
1843	54,680	1459	26.38	1975	36.12	516
1844	56,520	1380	24.42	2200	38.92	820
1845	58,360	1635	28.01	2293	39.29	558
1846	60,200	2189	36.36	2475	41.09	286
1847	62,050	2059	33.18	2268	36.59	209
1848	63,900	1550	24.26	2223	34.79	673
1849	65,750	1751	26.63	2403	36.55	652
1850	67,000	1745	25.81	2649	39.19	904
1851	69,450	2241	32.26	2803	40.36	562
1852	70,850	2284	32.23	2998	42.31	714
1853	72,250	2346	32.47	3072	42.51	726
1854	73,600	2013	27.35	3037	41.26	1024
1855	75,000	2557	34.10	3071	40.95	514
1856	76,400	2251	29.46	3151	41.24	900
1857	77,800	2131	27.39	3286	42.24	1155
1858	79,200	2545	32.13	3082	38.91	537
1859	80,600	2111	26.19	3399	42.17	1288
1860	82,000	2236	27.27	3381	41.23	1145
1861	82,985	2585	31.15	3626	43.69	1041
1862	83,231	2411	28.97	3522	42.32	1111
1863	83,477	2142	25.66	3388	40.57	1246
1864	83,686	2432	29.06	3422	40.89	990
1865	83,932	2708	32.26	3338	39.77	630
1866	84,178	2854	33.90	3535	41.99	681
1867	84,424	2608	30.89	3732	44.20	1124
1868	84,670	2798	33.04	3710	43.82	912
1869	84,916	2248	26.47	3434	40.44	1186
1870	85,162	2406	28.25	3486	40.93	1080
1871	85,427	2541	29.75	3438	40.24	897
1872	85,654	2294	26.78	3704	43.24	1410
1873	86,000	2899	33.71	3558	41.37	659
1874	86,000	2962	34.44	3582	41.65	620
1875	86,000	2581	30.01	3499	40.68	918
1876	86,600	2331	26.92	3623	41.84	1292
1877	87,000	2336	26.85	3601	41.39	1265
1878	87,300	2502	28.66	3697	42.35	1195
1879	87,600	2395	27.34	3403	38.83	1068
1880	88,000	2425	27.35	3475	39.49	1050
1881	96,524	2044	21.17	3489	36.14	1445
1882	97,656	2511	25.71	3785	38.76	1214
1883	98,564	2345	23.79	3576	36.28	1231
1884	99,481	2540	25.53	3745	37.44	1205
1885	100,406	2563	25.52	3868	38.52	1305
1886	101,340	2769	27.32	3961	39.08	1192
1887	102,283	2703	26.42	3870	37.83	1167
1888	103,234	2326	22.53	3823	37.03	1497
1889	104,194	3019	28.97	3912	37.63	902
1890	105,163	2726	25.92	3718	35.35	992
1891	107,864	2807	26.02	3830	35.50	1023
1892	109,038	2481	22.75	3686	33.80	1205
1893	110,225	2753	24.97	3809	34.55	1056
1894	111,425	2186	19.61	3545	31.81	1359
1895	112,638	2528	22.44	3702	32.95	1174
1896	113,864	2191	19.24	3673	32.25	1482
1897	115,103	2687	23.34	3687	32.03	1000
1898	116,356	2107	18.10	3559	30.58	1452
1899	117,622	2492	21.18	3492	29.68	1000
1900	118,902	2636	22.16	3410	28.67	774
1901	113,117	2213	19.56	3418	30.21	1205

TABLE No. 7.

Per Centage of Deaths from Zymotic Diseases to Sickness reported during the
Year ending December 31st, 1901.

Disease.	No. of Cases Reported.	No. of Deaths.	Per Centage.
Small Pox .....	...	...	...
Typhoid Fever.....	138	24	17·39
Scarlet Fever	1741	86	4·93
Diphtheria	65	17	26·15
Puerperal Fever	15	12	80·00
Erysipelas	82	2	2·43

TABLE No. 8.

Meteorological Observations for the Year ending 31st December, 1901.

Month.	Attached Thermometer.	Barometer.	Barometer corrected to 32deg. Fahr.	Hygrometer.		Temperature in Shade.		Earth Thermometer.		Mean Daily Temperature.	Humidity Saturation=100	Temperature of Town's Water.	Rainfall in inches.	Number of Deaths from	
				Dry Bulb.	Wet Bulb.	Maxi- mum.	Mini- mum.	One Foot	Four Feet.					Bronchitis.	Diarrhoea.
January	39·81	29·814	29·918	39·29	38·67	43·22	35·42	40·45	44·42	39·34	91	39·6	2·90	32	2
February ...	36·85	29·895	30·023	37·38	37·23	41·56	33·20	37·53	41·62	37·37	91	36·5	1·15	26	...
March	38·81	29·727	29·845	39·81	39·37	44·56	34·60	39·71	42·98	39·63	86	39·9	2·52	36	3
April	46·57	29·655	29·752	48·20	45·49	54·24	41·10	43·42	43·49	47·91	81	44·7	1·63	29	2
May	53·79	30·020	30·093	55·68	53·93	61·62	45·79	49·74	48·90	50·36	88	54·4	1·22	11	...
June	57·60	29·971	30·034	58·03	53·78	62·67	50·67	53·96	53·28	57·17	75	59·8	1·85	20	2
July	65·36	29·991	30·036	66·08	61·91	71·51	58·08	60·42	58·02	65·12	77	65·7	1·08	12	34
August	60·53	29·902	29·956	61·71	56·13	66·56	54·13	57·89	58·58	60·80	77	61·8	2·61	5	107
September ...	57·06	29·803	29·862	58·42	55·67	63·24	52·03	55·24	56·33	57·82	83	59·3	1·06	9	33
October	50·11	29·814	29·921	55·88	49·56	55·59	46·31	50·56	53·79	50·83	90	53·8	3·35	12	6
November ...	41·53	30·014	30·125	42·31	42·32	46·28	37·17	43·14	47·92	41·92	93	45·4	6·80	45	8
December ...	38·38	29·493	29·612	39·24	39·10	42·13	34·99	39·46	44·53	39·31	91	41·5	2·75	21	3

TABLE No. 9.

Summary of Work done during the Year ending 31st December, 1901.

	No. 1 District.	No. 2 District.	No. 3 District.	No. 4 District.	TOTAL.
Number of Ashpails cleansed .....	...	...	...	...	987,671
„ Ashpits „ .....	...	...	...	...	12,293
„ Animals removed	7	14	3	21	45
Houses Disinfected	451	524	347	313	1,635
Schools „ .....	...	11	...	3	14
Parcels of Bedding disinfected ...	30	56	4	42	132
Number of Complaints received	834	299	674	965	2,772
Inspection of Dwelling Houses...	3647	3438	3305	3255	13,645
„ Infected Houses	1171	2227	880	934	5,212
„ Lodging Houses ...	30	384	134	946	1,494
„ Cellars	245	276	241	404	1,166
„ Canal Boats .....	...	...	...	68	68
„ Vans and Tents .....	...	60	43	78	181
„ Schools	120	236	82	211	649
„ Mills and Workshops ...	389	447	415	506	1,757
„ Cowsheds, Dairies, and Milkshops	114	179	113	99	505
„ Slaughter Houses	64	163	110	145	482
„ Bake Houses	119	83	137	188	527
„ Markets .....	...	287	62	539	879
„ Ashpits and Yards	4863	3858	3861	4226	16,808
„ Drains	4960	4200	3989	5100	18,249
Re-inspections	1424	1915	1567	1942	6,848
Smoke Observations	3	...	7	...	10
Circular Letters sent	46	50	32	44	172
Notices served for Defective Slopstone Pipes	24	48	27	7	106
„ „ Drains ...	219	181	207	258	865
„ „ Spouts	44	38	8	54	144
„ „ Water Closets	64	88	130	140	422
„ „ Privies and Ashpits	43	63	15	31	152
„ „ Yard Pavement	42	89	10	5	146
„ Overcrowding	1	6	...	5	12
„ Linewashing	18	106	53	45	222
„ Manure Accumulations ...	1	1	3	6	11
„ Stagnant Water.....	...	2	21	47	70
„ General Nuisances	49	44	18	59	170
House Drains Tested	32	42	32	37	143
School „	13	18	13	36	80
Notices Served to Sewer, Level, Pave, &c.	145	...	...	238	383
„ Flag Yards ...	241	352	281	240	1,114
„ Convert Privies into W.C's.	233	297	314	224	1,068
„ Convert Back to Back Houses	33	...	...	...	33
„ Provide through Ventilation.....	3	3	...	6	12
„ Close Houses unfit for Habitation	...	5	5	20	30
„ Cowsheds .....	...	...	6	...	6
Fish, Wet—Condemned and Destroyed .....	...	...	...	1111lbs.	1,111lbs.
„ Dry „ .....	...	...	...	124 „	124 „
„ Shell „ .....	...	...	...	3064 „	3,064 „
Fruit, Condemned and Destroyed	200lbs.	322lbs.	...	...	522 „
Yeast „ .....	...	...	...	1512 „	1,512 „
Samphire „ .....	...	...	...	30 „	30 „
Mushrooms „ .....	...	40lbs.	...	...	40 „
Bottles of Pickles „ .....	...	...	...	64	64
Rabbits „ .....	...	...	...	12	12

TABLE No. 10.

Return of Work done by Inspector of Food and Drugs, &c., for year 1901.

Food and Drugs, Samples purchased	.....	.....	239
Cow-sheds and Dairies visited ...	.....	.....	83
Slaughter-houses visited ...	.....	.....	4,193
Meat Condemned and Destroyed	.....	.....	103,376 lbs.
Fruit Do.	.....	.....	580 lbs.

TABLE No. 11.

Contagious Diseases (Animals) Act, 1878.

Name of Disease.	Situation of Premises.	Date of Outbreak.	Number of Diseased Animals.	Number of Healthy Animals.	Slaughtered by Owner.	Slaughtered by Order of Board of Agriculture.	Number of Visits.
Farcy.	Yard off Boltons Court	January 3rd, 1901.	8	...	8	...	23

TABLE No. 12.

Substances submitted for Analysis during the year 1901.

Name of Article.	No. of Samples.	Result.	Name of Article.	No. of Samples.	Result.
Milk	87	Genuine.	Pepper	6	Genuine.
Milk, Skimmed.....	3	Do.	Linseed Meal	1	Do.
Cheese	10	Do.	Baking Powder ...	2	Do.
Butter	39	Do.	Arrowroot	2	Do.
Margarine.....	1	Do.	Seidlitz Powder ...	4	Do.
Self Raising Flour	2	Do.	Tincture of Rhubarb	5	Do.
Bread	1	Do.	Camphorated Oil ...	2	Do.
Lard	2	Do.	Yeast	2	Do.
Demerara Sugar ...	4	Do.	Finings	2	Do.
Coffee	12	Do.	Stout.....	4	Do.
Honey	1	Do.	Beer	12	Do.
Mustard	2	Do.	Whiskey	13	Do.
Milk	1	0·8 per cent. fat, 9·89 per cent. other solids=10·69 per cent. total solids. Vendor summoned, case dismissed.			
Milk	1	2·1 per cent. fat, 9·29 per cent. other solids=11·39 per cent. total solids. Vendor summoned and fined 10/6 and costs.			
Milk	1	2·2 per cent fat, 9·22 per cent. other solids=11·42 per cent. total solids. Vendor summoned and fined 10/- and costs.			
Milk	1	2·23 per cent. fat, 9·35 per cent. other solids=11·58 per cent. total solids. Vendor summoned and fined 10/- and costs.			
Milk	1	2·27 per cent. fat, 9·27 per cent. other solids=11·54 per cent. total solids. Vendor summoned and fined 10/- and costs.			
Milk	1	2·4 per cent fat, 8·82 per cent. other solids=11·22 per cent. total solids. Vendor summoned and fined 5/- and costs.			
Milk	1	2·4 per cent. fat, 9·49 per cent. other solids=11·89 per cent. total solids.			
Milk	1	2·5 per cent. fat, 8·42 per cent. other solids=10·92 per cent. total solids. Vendor summoned, case dismissed upon payment of costs.			
Coffee	1	50 per cent. chicory. Vendor summoned and fined 20/- and costs.			
Demerara Sugar ...	1	2·83 per cent. mineral salts, chiefly chloride and carbonate of potash. Vendor cautioned by Town Clerk.			
Yeast	1	Contained a minute quantity of arsenic, and a little potato starch.			
Malt	1	Contained $\frac{1}{30}$ th of a grain of arsenious oxide per lb., and a few lentils and peas.			
Stout	1	Contained a very small quantity of arsenic ; too small to be estimated.			
Beer	1	Contained a minute quantity of arsenic.			
Port Wine Bottoms	3	Constituents similar to those of wine, and free from arsenic and poisonous metals.			
Whiskey	1	29·8 degrees under proof. Vendor summoned and fined 20/- and costs			
Whiskey	1	27·4 degrees under proof. Vendor cautioned by Town Clerk.			
Whiskey	1	26·5 degrees under proof.			

TABLE No. 13.

Return of Port Sanitary Work for the year ending December 31st, 1901.

Steamships Inspected	.....	.....	.....	.....	720
Sailing Vessels Inspected ...	.....	.....	.....	.....	114
Re-Inspections	.....	.....	.....	.....	265
Condition of Vessels Inspected	{	Good	.....	.....	685
		Defective	.....	.....	149
<i>Defects remedied :—</i>					
Paints stored in Forecastle	.....	.....	.....	.....	4
Forecastle Deck Leaking	.....	.....	.....	.....	5
Do. Dirty	.....	.....	.....	.....	51
Do. Required Painting ...	.....	.....	.....	.....	27
Do. Ventilation and Light Defective	.....	.....	.....	.....	3
Defective Ventilation of Privies and Water Closets	.....	.....	.....	.....	25
Foul and Defective	Do.	Do.	.....	.....	62
Defective Water Casks replaced with Iron Tanks	.....	.....	.....	.....	2
Foul Water Casks and Tanks	.....	.....	.....	.....	39
Dirty Provision Lockers	.....	.....	.....	.....	22
Foul Bilges ...	.....	.....	.....	.....	18
„ Peaks	.....	.....	.....	.....	3
„ Chain Lockers under Forecastle...	.....	.....	.....	.....	16

TABLE 1A.

Vital Statistics of Whole District during 1901 and Previous Years.

YEAR.	Population estimated to Middle of each year.	BIRTHS.		DEATHS UNDER 1 YEAR OF AGE		DEATHS AT ALL AGES. TOTAL.		Total Deaths in Public Institu- tions in the District.	Deaths of Residents registered in Public Institu- tions beyond the District. (Work- house)	DEATHS AT ALL AGES. NETT.	
		Number	Rate*	Number	Rate per 1,000 Births registered	Number	Rate*			Number	Rate*
1891.	107,864	3830	35.50	892	227	2807	26.02	61	177	2984	27.66
1892.	109,038	3686	33.80	805	216	2481	22.75	55	199	2671	24.49
1893.	110,225	3809	34.55	1032	268	2753	24.97	48	150	2903	26.33
1894.	111,425	3545	31.81	770	217	2186	19.61	56	129	2315	20.77
1895.	112,638	3702	32.95	927	249	2528	22.44	81	161	2689	23.87
1896.	113,864	3673	32.25	760	204	2191	19.24	58	151	2342	20.56
1897.	115,103	3687	32.03	954	263	2687	23.34	63	166	2853	24.78
1898.	116,356	3559	30.58	812	221	2107	18.10	81	138	2245	19.29
1899.	117,622	3492	29.68	889	255	2492	21.18	85	181	2673	22.72
1900.	118,902	3410	28.67	814	236	2636	22.16	66	200	2836	23.85
Averages for years 1891-1900.	113,303	3639	32.18	865	235	2486	21.98	65	165	2651	23.43
1901.	113,117	3418	30.21	737	218	2213	19.56	75	149	2362	20.88

*Rates calculated per 1,000 of estimated population.

Area of District in acres (exclusive
of area covered by water) } 3,721.

Total population at all ages.....112,982
Number of inhabited houses..... 24,194
Average number of persons per house 4.66

} At Census
of 1901.

TABLE 2A.

Vital Statistics of separate Localities in 1901.

Names of Localities.	Population estimated to middle of year.	Births registered.	Deaths at all Ages..	Deaths under 1 year.
St. John's Ward	11409	378	212	65
Avenham Ward	7363	132	110	22
Christ Church Ward	8753	254	159	48
Ashton Ward	7688	210	98	33
Maudland Ward	7783	213	130	50
St. Peter's Ward	10597	352	213	67
Moorbrook Ward	9080	315	183	78
Park Ward	14592	492	290	124
Trinity Ward	11098	338	243	66
Deepdale Ward	8986	272	156	62
Ribbleton Ward	8506	266	201	68
Fishwick Ward	7262	195	143	50
Public Institutions .....	.....	1	75	5

TABLE 3A.

Cases of Infectious Disease notified during the Year 1901.

NOTIFIABLE DISEASE	CASES NOTIFIED IN WHOLE DISTRICT.								TOTAL CASES NOTIFIED IN EACH LOCALITY.												
	At all ages.	At Ages—Years.							St. John's Ward.	Avenham Ward.	Christ Church Ward.	Ashton Ward.	Maudland Ward.	St. Peter's Ward.	Moorbrook Ward.	Park Ward.	Trinity Ward.	Deeple Ward.	Ribbleton Ward.	Fishwick Ward.	Gaol, Infirmary, &c.
		Under 1	1 to 5	5 to 15	15 to 25	25 to 65	65 and up wards														
Small Pox ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cholera ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria	65	4	18	21	12	10	...	3	7	4	2	6	10	4	7	7	6	5	4	...	...
Membranous Croup	4	...	4	...	...	...	...	...	...	...	...	1	...	...	1	1	1	...	...	...	...
Erysipelas	82	6	4	6	7	55	4	14	3	5	9	3	3	8	10	12	8	1	6	...	...
Scarlet Fever	1741	25	506	1052	100	58	...	191	52	68	102	102	142	167	283	146	165	179	138	6	...
Typhus Fever ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Enteric Fever	138	...	16	38	34	50	...	17	5	24	5	5	8	10	19	15	18	6	6	...	...
Relapsing Fever... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Continued Fever	2	...	...	...	1	1	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
Puerperal Fever	15	...	...	4	11	...	...	2	...	3	1	1	...	...	3	1	2	2	...	...	...
Plague ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	2047	35	548	1121	165	174	4	227	67	104	119	119	163	190	323	182	200	193	154	6	...

TABLE 4A.

Causes of, and Ages at, Death during Year 1901.

CAUSES OF DEATH.	Deaths in or belonging to whole District at subjoined Ages.							Deaths in Localities (at all ages.)												Deaths in Public Institutions.	Deaths in Workhouse.
	All Ages.	Under 1	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and upwards.	St. John's Ward.	Avenham Ward.	Christ Church Ward.	Ashton Ward.	Maudland Ward.	St. Peter's Ward.	Moorbrook Ward.	Park Ward.	Trinity Ward.	Deepdale Ward.	Ribbleton Ward.	Fishwick Ward.		
Small-pox .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Measles	31	7	24	...	...	...	...	3	3	3	...	...	1	...	2	5	5	6	3	...	...
Scarlet Fever	86	5	51	23	4	3	...	12	1	1	...	5	6	13	8	9	9	11	10	1	...
Whooping Cough... ..	38	17	18	3	...	...	...	11	1	...	...	...	2	7	5	2	4	2	3	..	1
Diphtheria and Membranous Croup	17	2	13	1	...	1	...	1	1	2	...	2	4	1	1	2	...	3	...	...	...
Croup	8	1	4	3	...	...	...	...	1	2	...	...	1	1	2	...	...	1	...	...	...
Fever { Typhus ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
{ Enteric	24	...	1	3	8	12	...	3	...	3	...	1	2	1	3	7	3	...	...	1	...
{ Other continued .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Epidemic Influenza	19	...	1	...	...	12	6	1	1	1	1	...	2	2	2	3	1	3	1	...	1
Cholera ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Plague .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diarrhoea	207	180	14	...	...	8	5	14	5	13	2	21	21	25	35	15	11	26	15	...	4
Enteritis	33	25	3	1	1	3	...	3	...	6	...	1	2	...	6	3	4	8	4	...	1
Puerperal Fever	12	...	...	...	4	8	...	1	...	2	2	1	...	1	1	1	1	1	1	...	...
Erysipelas	2	...	...	...	...	2	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...
Other Septic Diseases ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phthisis	128	1	...	8	26	90	3	11	3	9	6	10	8	9	18	13	11	11	8	...	11
Other Tubercular Diseases	147	91	38	10	4	4	...	10	5	13	6	12	16	19	15	24	7	9	8	3	...
Cancer, Malignant Disease ...	77	...	...	...	1	58	18	5	2	3	5	3	7	8	9	10	5	4	8	2	6
Bronchitis	276	84	45	1	2	76	68	25	9	14	14	15	26	17	43	39	12	21	16	7	18
Pneumonia	140	33	33	6	8	48	12	10	9	12	9	4	16	5	12	18	13	13	11	4	4
Pleurisy .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other Diseases of Respiratory organs	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Alcoholism }	40	...	...	...	...	38	2	1	4	5	1	1	5	2	8	6	2	1	...	1	3
Cirrhosis of Liver } .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Venereal diseases	14	12	...	...	...	2	...	...	...	...	...	...	...	2	5	2	2	1	...	...	2
Premature Birth	86	85	1	...	...	...	...	4	4	4	4	5	14	10	10	4	10	7	5	1	4
Diseases and accidents of Parturition	13	...	...	...	1	12	...	...	2	1	...	...	2	1	5	...	1	1	...	...	...
Heart Diseases	211	5	7	6	10	118	65	22	15	16	6	11	23	7	24	20	7	24	13	5	18
Accidents	57	2	7	10	3	24	11	3	6	2	6	1	1	...	4	4	1	3	2	24	...
Suicides	4	...	...	...	...	4	...	...	...	...	1	...	...	...	1	1	...	...	...	1	...
Murder	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Old Age	123	...	...	...	...	6	117	9	9	8	6	4	10	13	11	11	3	9	9	2	19
All other causes	567	203	24	15	19	199	107	62	29	38	29	33	43	39	60	44	44	40	26	23	57
All causes.....	2362	753	284	90	91	730	414	212	110	159	98	130	213	183	290	243	156	201	143	75	149

INFANTILE MORTALITY, 1901.








INFANTILE DIARRHOEA, 1901.

The Red Spots • indicate Deaths from Diarrhoea
under the age of One Year.





ZYMOTIC DISEASES, 1901.

The Red Spots  indicate Deaths from Scarlet Fever,
The Blue Spots  indicate Deaths from Typhoid Fever,
The Yellow Spots  indicate Deaths from Diphtheria.





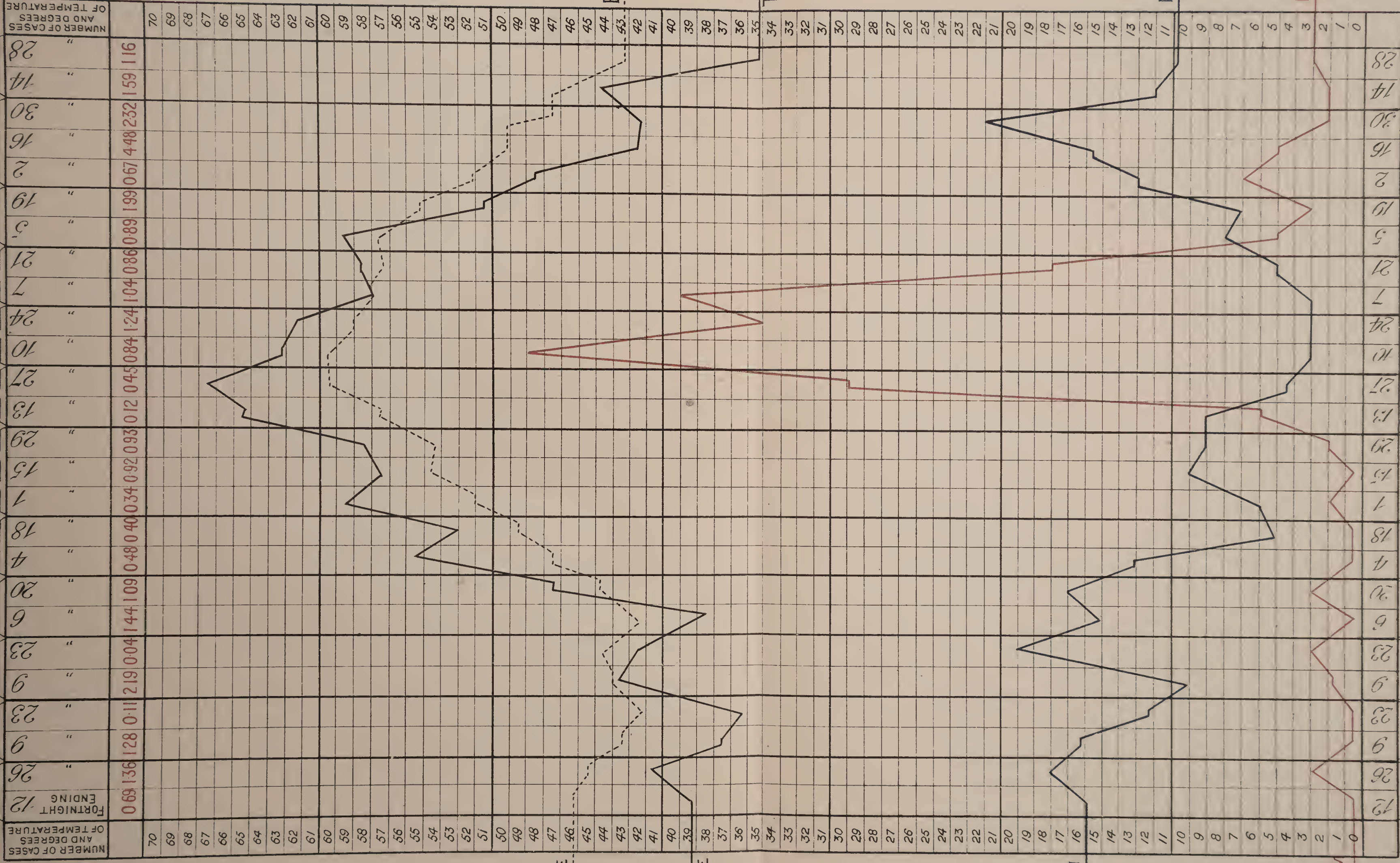
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Portions coloured Red indicate Property reported upon and Improved during the year 1901.

Those in lighter shade indicate Blocks dealt with during the previous Seventeen years.



JAN. FEB. MAR. APR. MAY. JUN. JUL. AUG. SEP. OCT. NOV. DEC.



RAINFALL
IN INCHES

EARTH TEMPERATURE
4 FT

MEAN DAILY
TEMPERATURE

MORTALITY FROM
BRONCHITIS

MORTALITY FROM
DIARRHOEA

RAINFALL
IN INCHES

EARTH TEMPERATURE
4 FT

MEAN DAILY
TEMPERATURE

MORTALITY FROM
BRONCHITIS

MORTALITY FROM
DIARRHOEA

JAN. FEB. MAR. APR. MAY. JUN. JUL. AUG. SEP. OCT. NOV. DEC.



